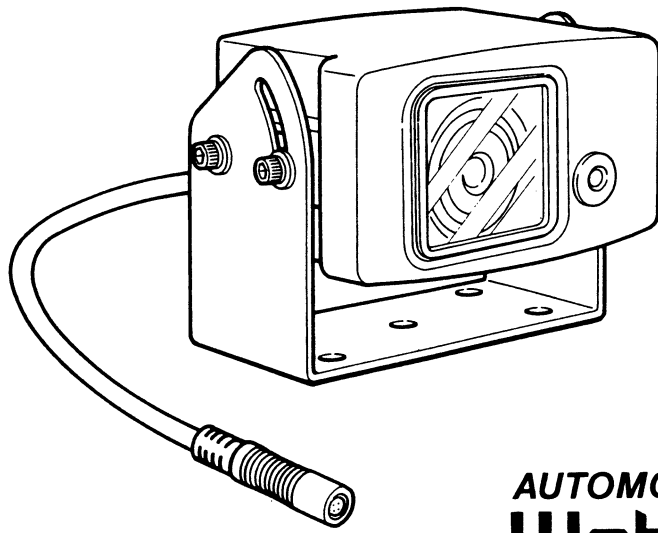
SSC-520AM

SERVICE MANUAL



AUTOMOTIVE
WatchCam

SPECIFICATIONS

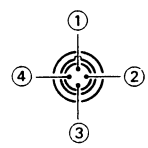
Pickup device

Imager	Interline transfer type CCD
Picture elements	510 (h) × 492 (v)
Image size	½ inch

Optical and other characteristics

Lens	Focal length 3 mm Maximum aperture f/1.4
Scanning format	525 lines, 2:1 interlace
Synchronization	Internal synchronization
Scan frequencies	Horizontal 15.734 kHz; Vertical 59.94 Hz
Horizontal resolution	380 TV lines
Required illumination	Standard 400 lux; Minimum 5 lux
Signal-to-noise ratio	Minimum 45 dB
Power supply	12 V DC
Power consumption	Maximum 1.8 W (at DC 12 V)
Operating temperature	−20°C to +70°C (−4°F to +158°F)
Storage temperature	−30°C to +85°C (−22°F to +185°F)

Weight	650 g (1 lb 7 oz)
Input/output connections	4-pin multi-connector



① DC power input
② Video output
image: 0.7 Vp-p (75 ohms)
synchronization: 0.3 Vp-p
(sync negative)
③ Ground
④ Audio output
−5 dBs (0 dBs = 0.775 V)
output impedance:
10 kilohms maximum

Supplied accessories

Rubber nuts (5)
Instruction manual

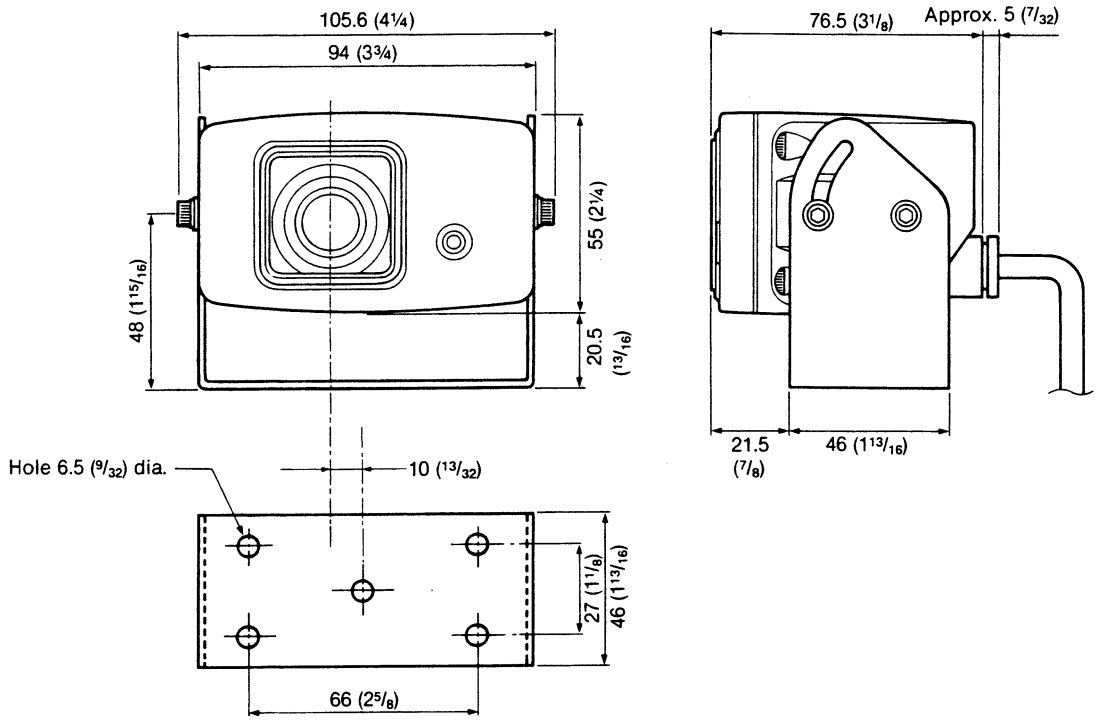
Optional equipment and accessories

VK-318A Splash-resistant camera cable (18 m)
SSM-620AM 6-inch black and white monitor
SSM-621AM 6-inch black and white monitor (available in the near future)
WU-611AM Monitor hood

CCD Black and White Video Camera

SONY®

Dimensions



unit: mm (inches)

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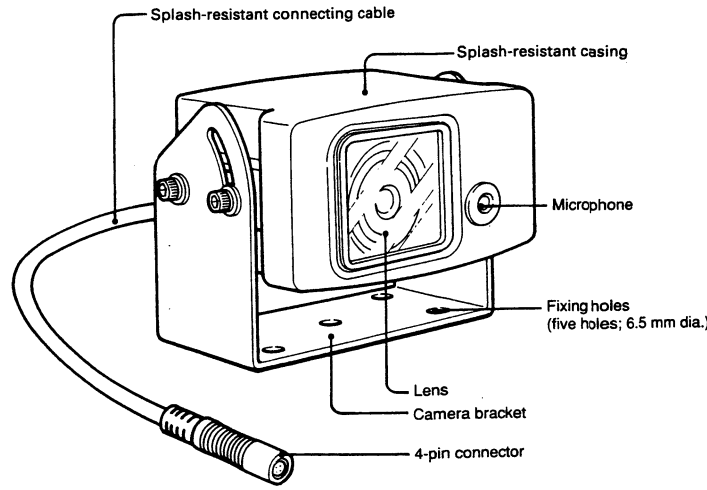
SECTION 1
GENERAL

1-1. FEATURES

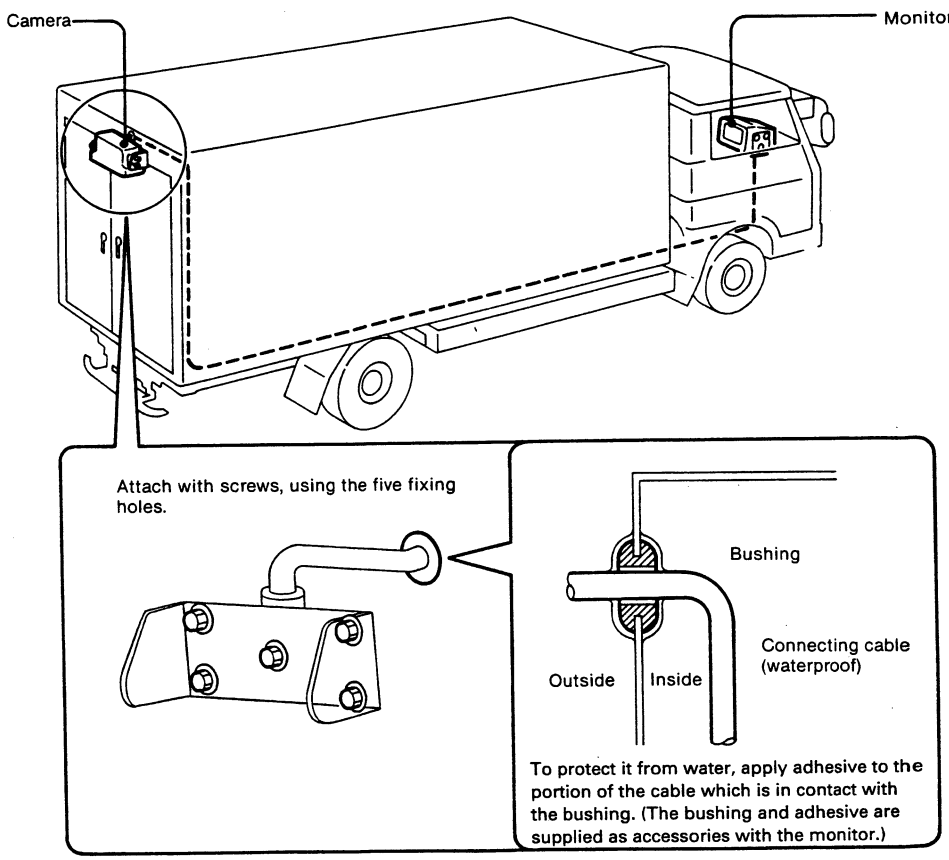
The SSC-520AM is a CCD black and white video camera designed for fitting to a bus or truck, to provide the driver with a view of the rear of the vehicle. It should be used together with a black and white monitor such as the Sony SSM-620AM/621AM (available in the near future).

It has the following main features:
- Compact and lightweight
- Uses a CCD (Charge Coupled Device) image sensor, giving a high resolution picture.
- Wide field of view—100 degrees horizontally, 80 degrees vertically.
- Protected by a splash-resistant casing, so can be used even where exposed to rain, snow and spray.
- Uses 4-pin connector, so it only one cable is needed to connect to monitor.
- Operates in wide temperature range (−20°C to +70°C; −4°F to +158°F).
- Built-in electret capacitor microphone allows aural check.

1-2. PART DESIGNATIONS



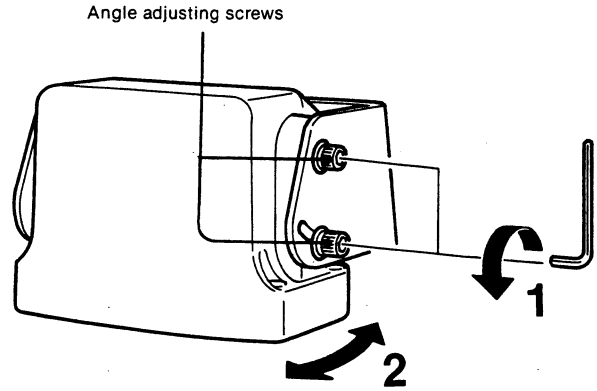
1-3. INSTALLATION EXAMPLE


Camera
Monitor
Attach with screws, using the five fixing holes.
Bushing
Connecting cable (waterproof)
Outside
Inside
To protect it from water, apply adhesive to the portion of the cable which is in contact with the bushing. (The bushing and adhesive are supplied as accessories with the monitor.)

1-4. ADJUSTING THE CAMERA ANGLE

1 Loosen the angle adjusting screws on the left and right sides, using a 3-mm Allen key.

2 Adjust the camera angle, then tighten the screws.



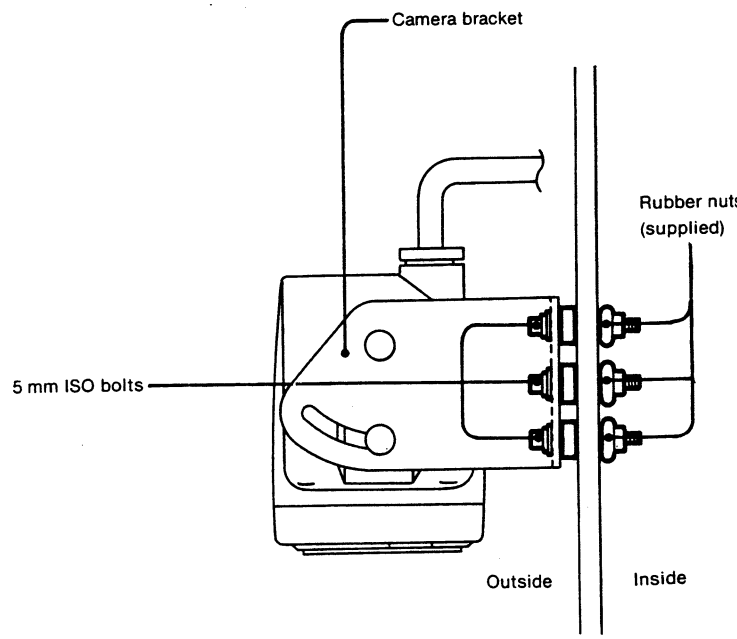
1-5. MOUNTING USING RUBBER NUTS

If the camera bracket is fastened directly to the vehicle body, noise may appear in the picture on the monitor. In this case the camera bracket should be mounted so that it is not in direct contact with the vehicle body, using the rubber nuts supplied as accessories.

1 Enlarge the five holes in the vehicle body to between 10.2 mm and 10.5 mm diameter.

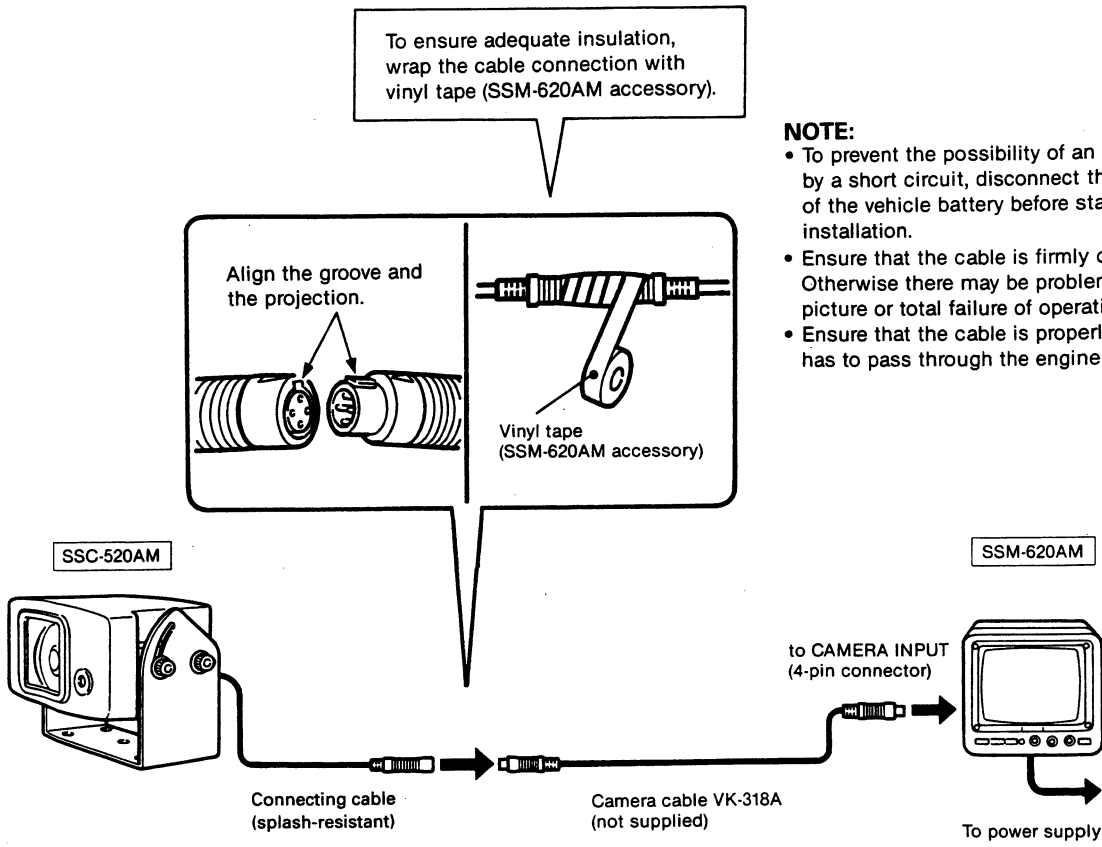
2 Insert the rubber nuts supplied into these holes.

3 Using 5 mm ISO thread bolts at least 20 mm long, fasten to a torque of 5 to 6 kg-cm.



1-6. CONNECTING TO MONITOR

Example: connecting to an SSM-620AM 6 inch black and white monitor (not supplied).


To ensure adequate insulation, wrap the cable connection with vinyl tape (SSM-620AM accessory).
Align the groove and the projection.
Vinyl tape (SSM-620AM accessory)
SSC-520AM
SSM-620AM
to CAMERA INPUT (4-pin connector)
Connecting cable (splash-resistant)
Camera cable VK-318A (not supplied)
To power supply

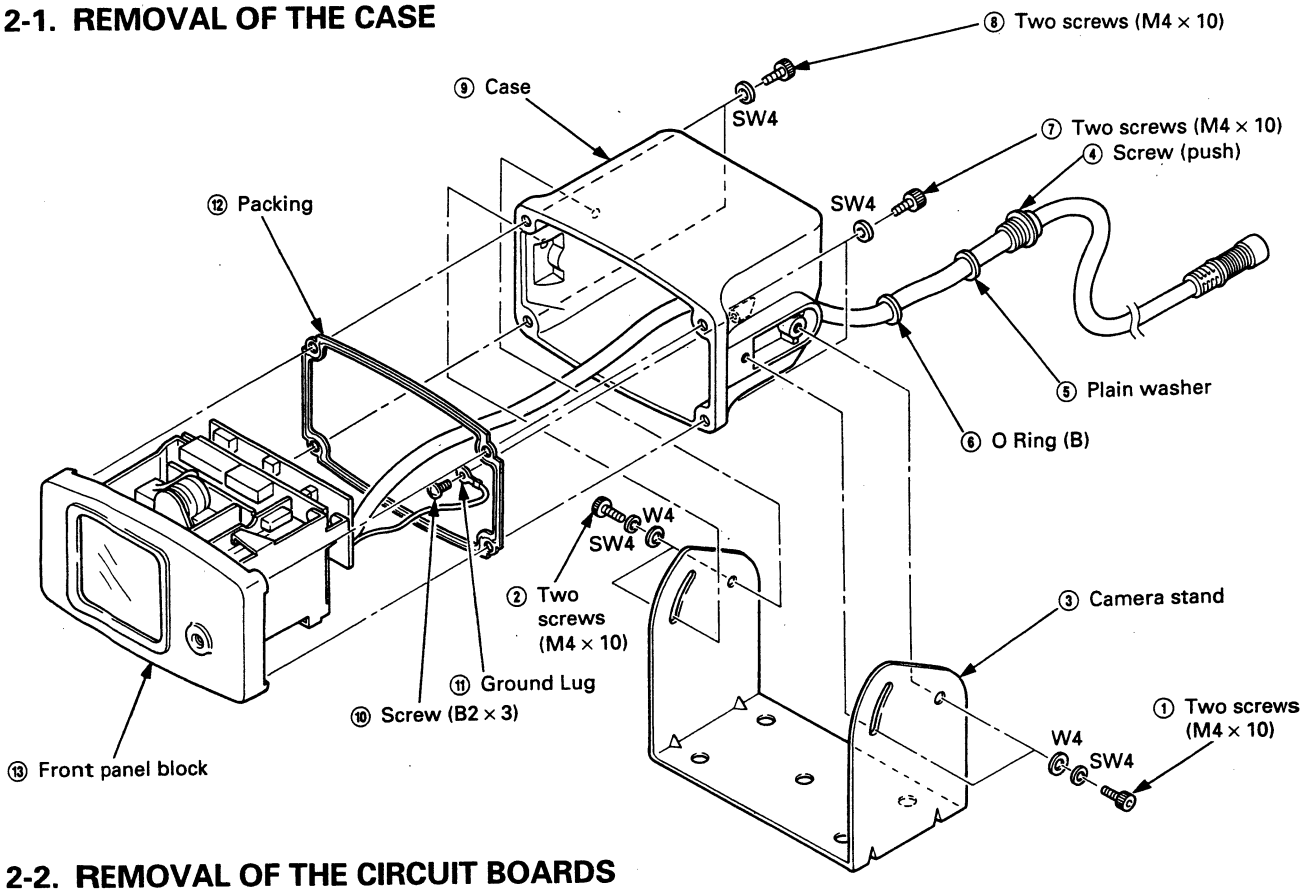
NOTE:

- To prevent the possibility of an accident caused by a short circuit, disconnect the ground terminal of the vehicle battery before starting the installation.
- Ensure that the cable is firmly connected. Otherwise there may be problems such as a poor picture or total failure of operation.
- Ensure that the cable is properly protected if it has to pass through the engine compartment.

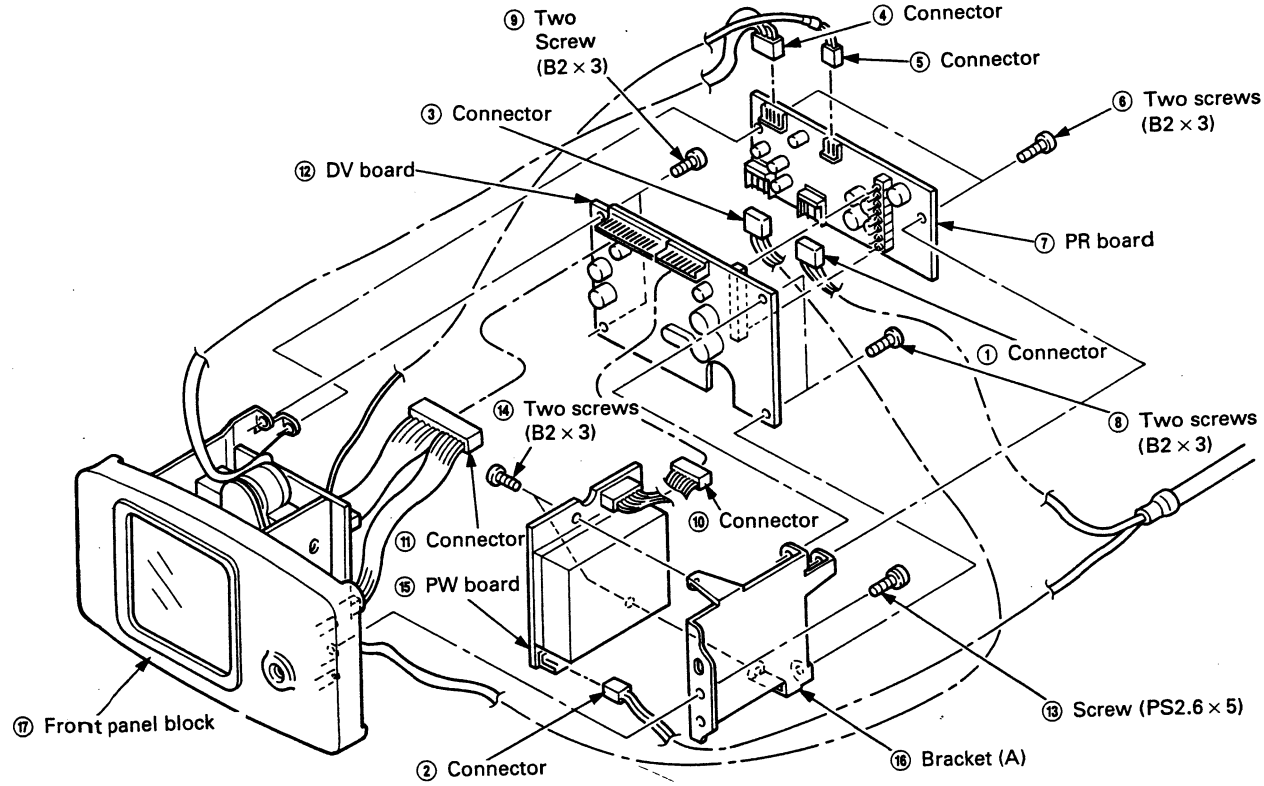
The camera is supplied with power through the connecting cable, so the camera power is automatically turned on when the monitor is powered on.

SECTION 2
DISASSEMBLY

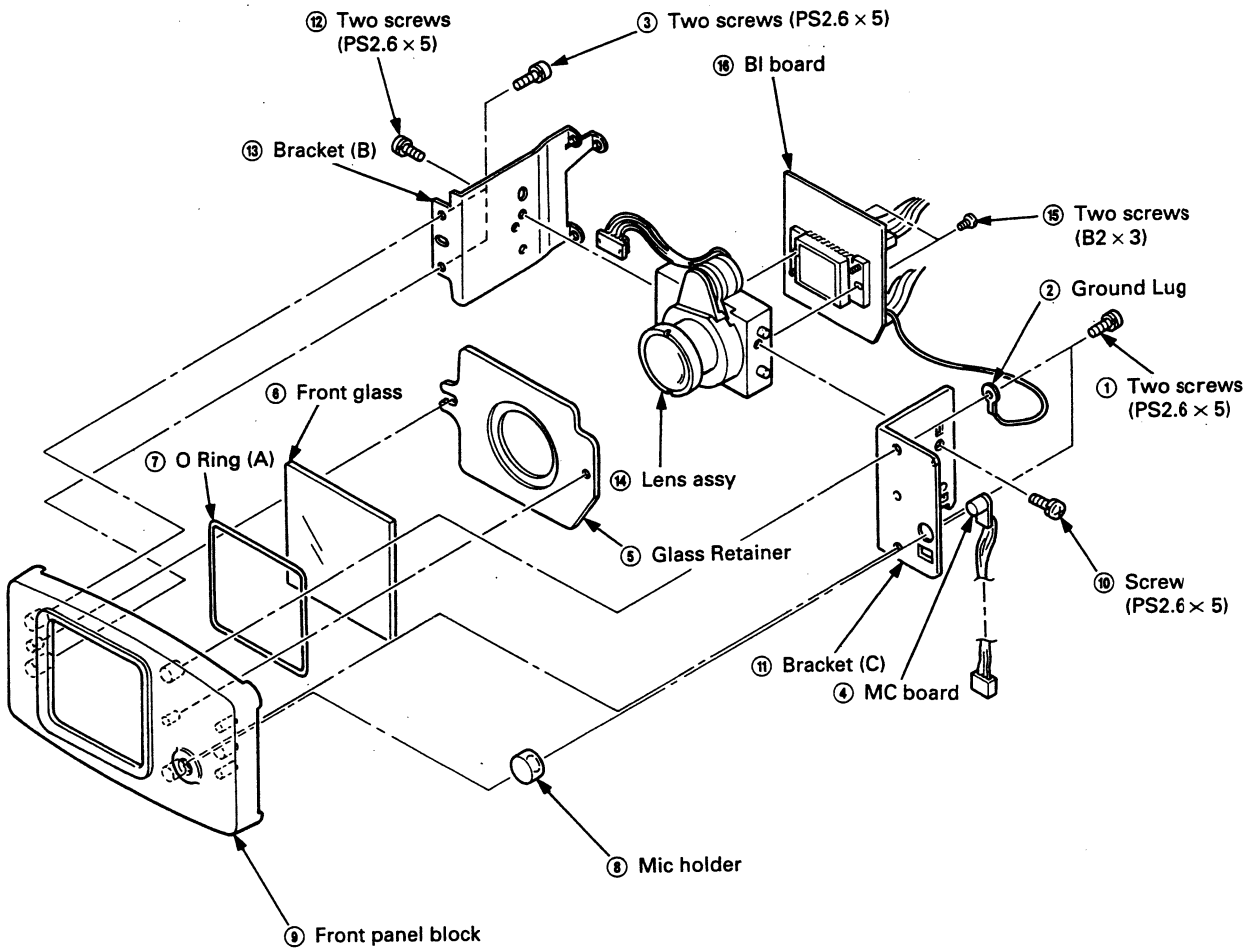
2-1. REMOVAL OF THE CASE



2-2. REMOVAL OF THE CIRCUIT BOARDS



2-3. REMOVAL OF THE LENS BLOCK


⑫ Two screws (PS2.6 × 5)
③ Two screws (PS2.6 × 5)
⑯ BI board
⑬ Bracket (B)
⑮ Two screws (B2 × 3)
② Ground Lug
① Two screws (PS2.6 × 5)
⑥ Front glass
⑦ O Ring (A)
⑭ Lens assy
⑤ Glass Retainer
⑩ Screw (PS2.6 × 5)
⑪ Bracket (C)
④ MC board
⑧ Mic holder
⑨ Front panel block

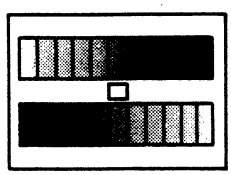
SECTION 3
ADJUSTMENTS

Note on replacing CCD image device

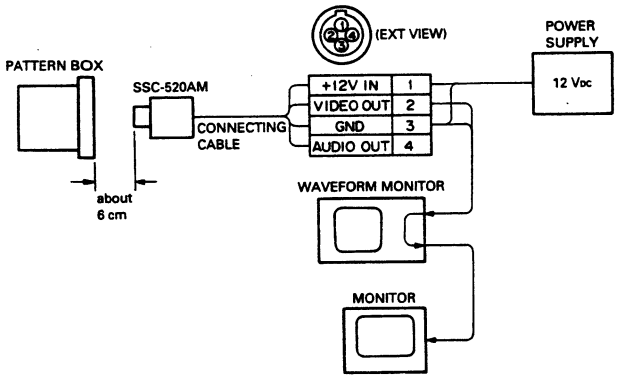
The CCD imager is structurally sensitive to static electricity and can be permanently damaged. For this reason, take care to handle it as well as MOS IC. Morever, care should be taken for dust not to be stuck on the light receiving section and for strong light not to get into it.

Required equipments:

Wave form monitor
Oscilloscope
Monitor TV
Gray scale pattern chart
  luminace 706 nit
  color temperature 3200° K

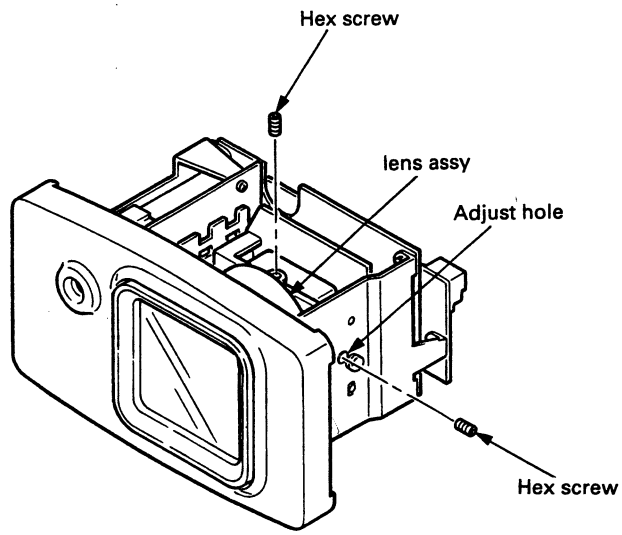


Connections:

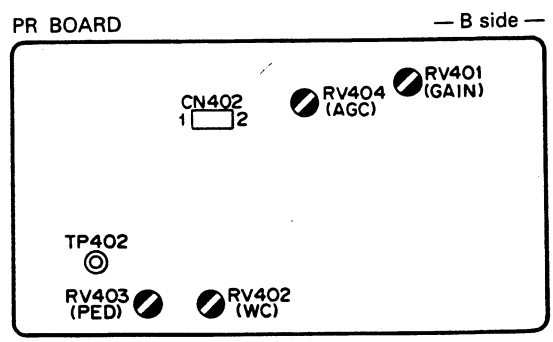


3-1. BACK FOCUS ADJUSTMENT

1. Place the camera at exactly one meter away from the subject and position the camera in a horizontal plane level.
2. To bring the subject into proper focus, loosen the 2 hex screws and adjust the lens assy by moving it back and forth.
3. After completing the adjustment, tighten the 2 hex screws.

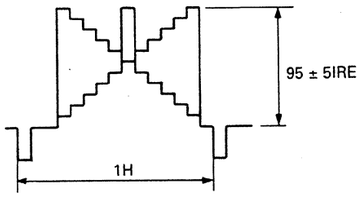


3-2. PR BOARD



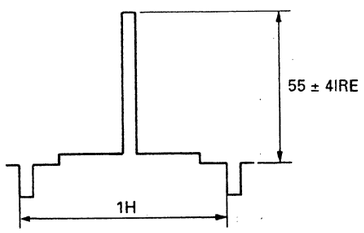
3-2-1. AGC Adjustment

Subject: Gray scale chart
Equipment: Wave form monitor (Oscilloscope)
Test point: TP402 (VIDEO OUT)
Adjustment point: RV404
Specification: 95 ± 5 IRE (680 ± 40 mV)
Adjustment procedure:
1. Adjust the ND filter and the brightness of pattern box so that the video signal level at CN402, 1 pin (CCD IN) is 200 ± 20 mV.
2. Adjust RV404 so that the video signal level at TP402 (VIDEO OUT) is 95 ± 5 IRE.



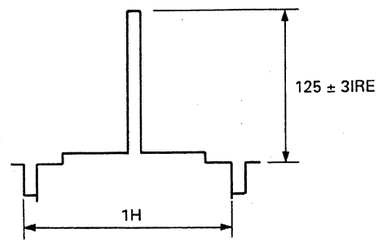
3-2-2. Maximum Gain Adjustment

Subject: Gray scale chart
Equipment: Waveform monitor (Oscilloscope)
Test point: TP402 (VIDEO OUT)
Adjustment point: RV401
Specification: 55 ± 4 IRE (390 ± 30 mV)
Adjustment Procedure:
1. With a black cloth, cover the gray scale pattern chart leaving the white portion at the center of chart uncovered.
2. Adjust the ND filter and the brightness of pattern box so that the lens' incoming light is 3 lux.
3. Adjust RV401 so that the video signal level at TP402 (VIDEO OUT) is 55 ± 4 IRE.



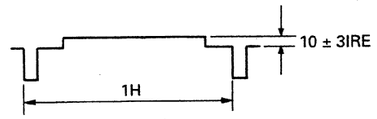
3-2-3. White Clip Adjustment

Subject: Gray scale chart
Equipment: Waveform monitor (Oscilloscope)
Test point: TP 402 (VIDEO OUT)
Adjustment point: RV402
Specification: 125 ± 3 IRE (890 ± 20 mV)
Adjustment procedure:
1. Adjust the brightness of the pattern box so that the all-white pattern is 2000 lux.
2. Cover the gray scale with a black cloth leaving the central white portion uncovered and shoot the chart.
3. Adjust RV402 so that the video signal level at TP402 (VIDEO OUT) is 125 ± 3 IRE.



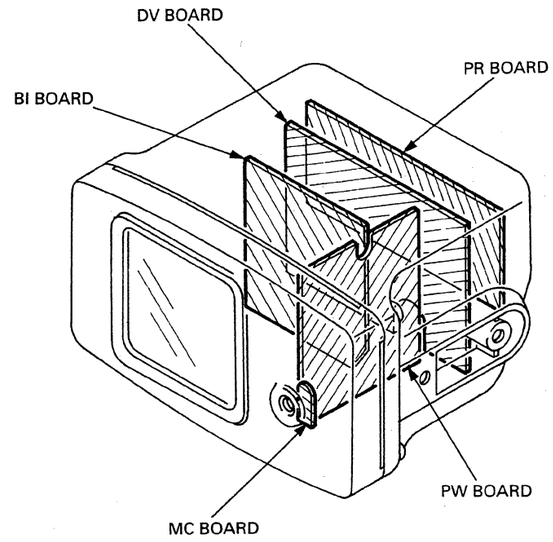
3-2-4. Pedestal Adjustment

Subject: Close "C"
Equipment: Waveform monitor (Oscilloscope)
Test point: TP402 (VIDEO OUT)
Adjustment point: RV403
Specification: 10 ± 3 IRE (70 ± 20 mV)
Adjustment Procedure:
1. Adjust RV403 so that the pedestal level at TP402 (VIDEO OUT) is 10 ± 3 IRE.

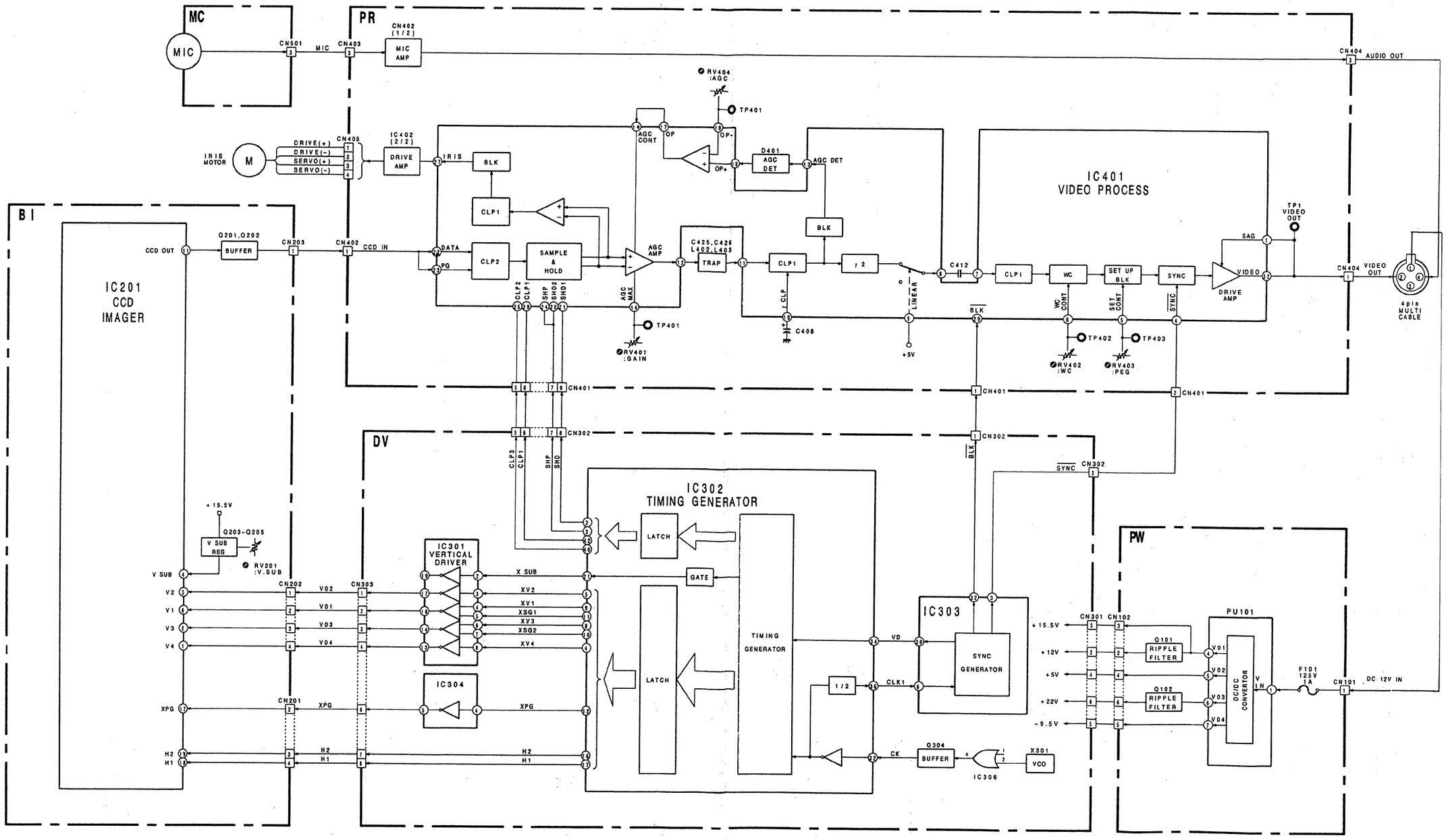


SECTION 4
DIAGRAMS

4-1. BOARD LOCATION



4-2. BLOCK DIAGRAM

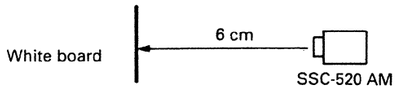


4-3. SCHEMATIC DIAGRAMS

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number sprcified.

Note:

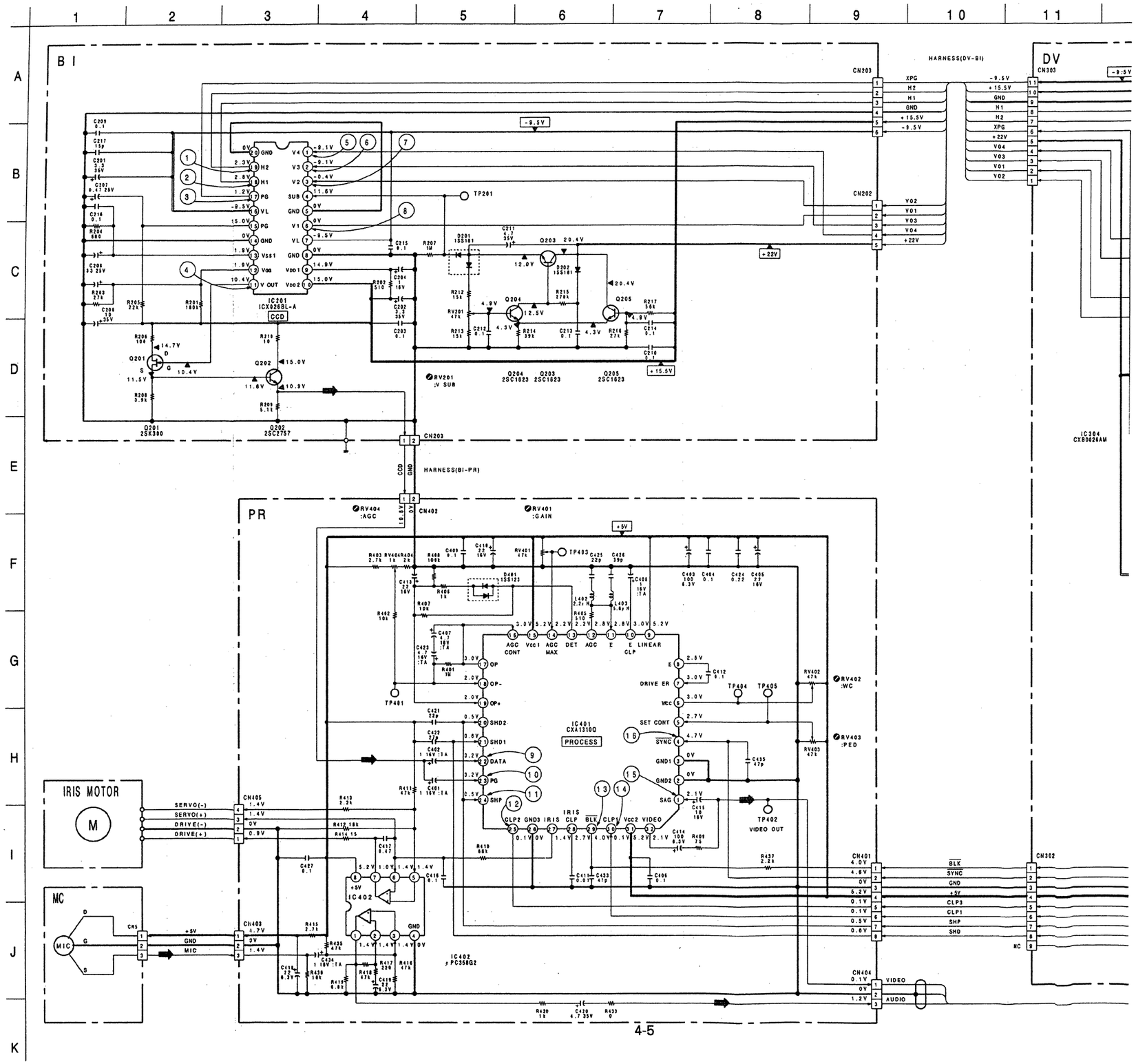
- All capacitors are in μF unless otherwise noted. p: μμF 50 WV or less are not indicated except for electrolytic and tantalums.
- All resistors are in ohms, 1/10 W unless otherwise noted. kΩ = 1000 Ω, MΩ = 1000 kΩ



- Readings are taken with a 10 MΩ digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- Circled numbers are waveform references.
- ——: B + bus.
- ➡: signal path.
- **——: GND**

Waveforms

① 5.2 Vp-p (H)	② 5.5 Vp-p (H)	③ 10.5 Vp-p (H)	④ 0.4 Vp-p (H)
⑤ 4.0 Vp-p (H)	⑥ 9.0 Vp-p (H)	⑦ 9.0 Vp-p (H)	⑧ 9.3 Vp-p (H)
⑨ 0.6 Vp-p (H)	⑩ 0.6 Vp-p (H)	⑪ 5.6 Vp-p (H)	⑫ 5.0 Vp-p (H)
⑬ 5.0 Vp-p (H)	⑭ 5.0 Vp-p (H)	⑮ 0.9 Vp-p (H)	⑯ 4.8 Vp-p (H)
⑰ 5.6 Vp-p (H)	⑱ 5.6 Vp-p (H)	⑲ 0.25 Vp-p (H)	⑳ 0.4 Vp-p (H)
㉑ 0.35 Vp-p (H)	㉒ 0.4 Vp-p (H)	㉓ 5.0 Vp-p (H)	㉔ 5.0 Vp-p (H)
㉕ 6.2 Vp-p (H)	㉖ 5.0 Vp-p (H)	㉗ 5.2 Vp-p (H)	㉘ 2.5 Vp-p (H)



10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

HARNESS(DV-BI)

DV

CN303

IC301 CXD1250M V.DRIVER

IC302 CXD1156Q TIMING GENERATOR

IC303 CAD1159Q SYNC GEN

IC304 CXB0026AM

IC305

IC306

IC308 TC7S32F

Q301 Q302 Q303 Q304 2SC1623

NOT MOUNTED

PW

PU101 DC/DC CONVERTOR

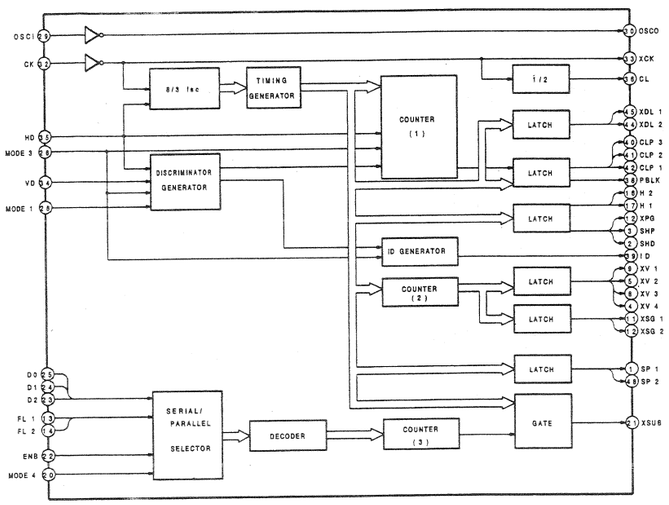
CN301 CN302 CN101 CN102

4pin Multi Cable

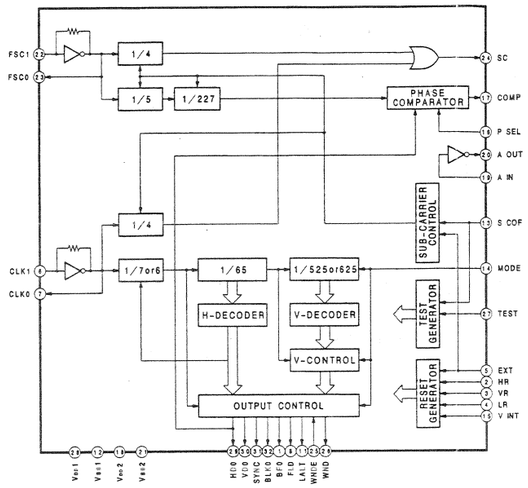
1	+12V
2	VIDEO OUT
3	GND
4	AUDIO OUT

Semiconductor Pin Assignment

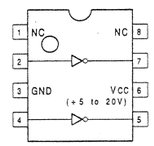
• CXA1310AQ



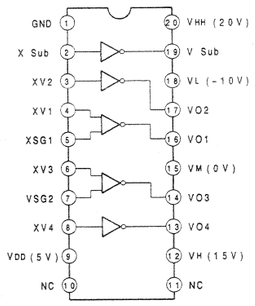
• CXD1159Q



• CXB0026AM

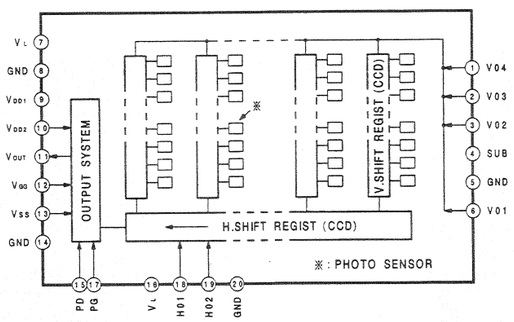


• CXD1250M

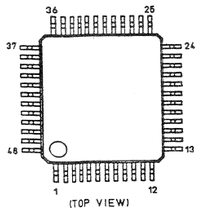


• CXD1156Q

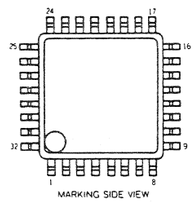
• ICX026BL



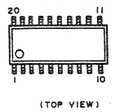
• CXD1156Q



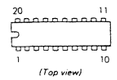
• CXA1310AQ
• CXD1159Q



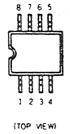
• CXD1250M



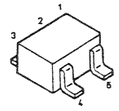
• ICX026BL-A



• CXB0026AM
• UPC358G2

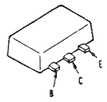


• TC7S32F

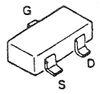


• 2SC1623
• 2SC2757

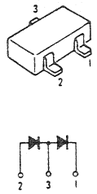
• 2SD999



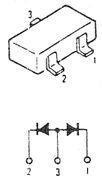
• 2SK300-3



• 1SS123

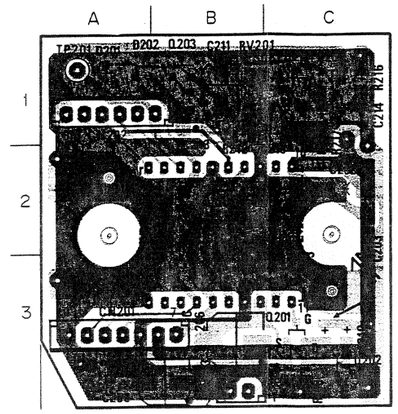


• 1SS181

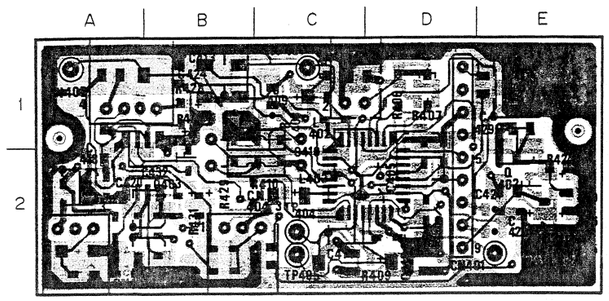


4-4. MOUNTING DIAGRAMS

BI Board — A side —

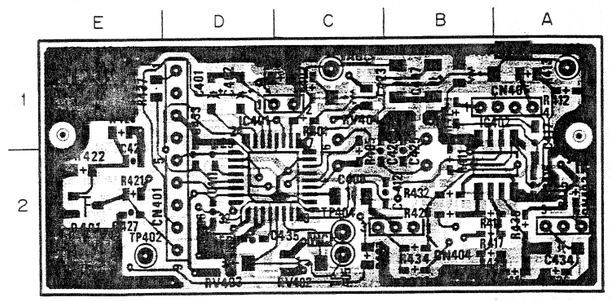


PR Board — A side —



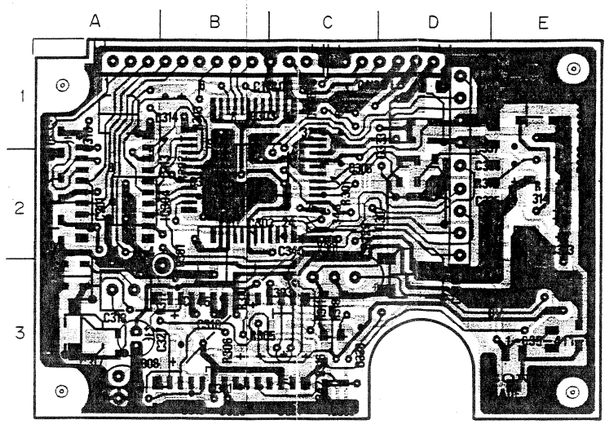
DIODE
D401 D-1

PR Board — B side —



IC
IC401 D-1
IC402 B-1
VARIABLE RESISTOR
RV401 B-1
RV402 C-2
RV403 D-2
RV404 C-1

DV Board — A side —



SECTION 5
REPAIR PARTS

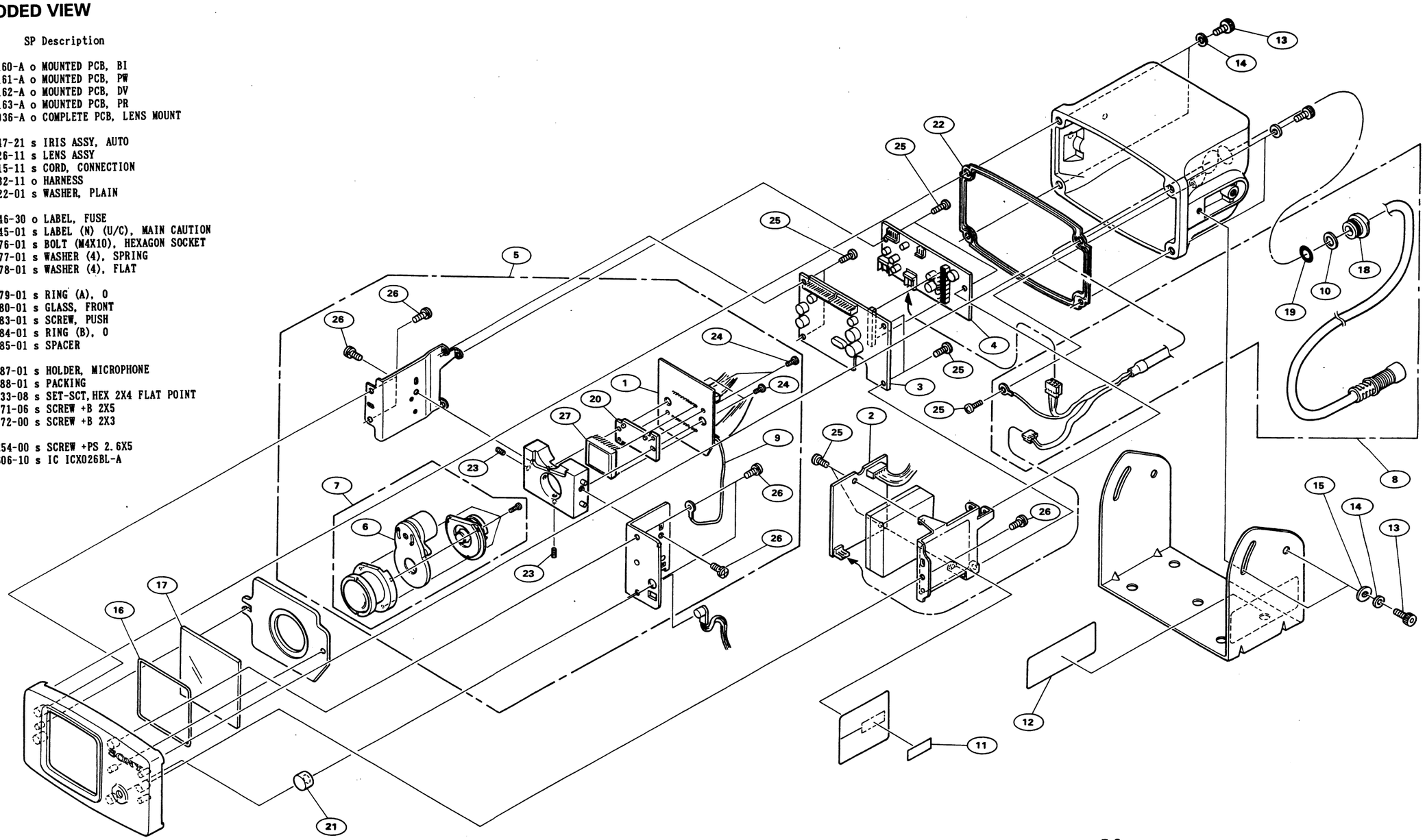
NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.

- Items marked "o" in the SP column are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All resistors are in ohms.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. EXPLODED VIEW

No.	Part No.	SP	Description
1	A-7514-160-A	o	MOUNTED PCB, BI
2	A-7514-161-A	o	MOUNTED PCB, PW
3	A-7514-162-A	o	MOUNTED PCB, DV
4	A-7514-163-A	o	MOUNTED PCB, PR
5	A-7608-036-A	o	COMPLETE PCB, LENS MOUNT
6	1-547-247-21	s	IRIS ASSY, AUTO
7	1-547-426-11	s	LENS ASSY
8	1-575-915-11	s	CORD, CONNECTION
9	1-946-032-11	o	HARNESS
10	2-125-422-01	s	WASHER, PLAIN
11	3-701-946-30	o	LABEL, FUSE
12	3-703-845-01	s	LABEL (N) (U/C), MAIN CAUTION
13	3-718-876-01	s	BOLT (M4X10), HEXAGON SOCKET
14	3-718-877-01	s	WASHER (4), SPRING
15	3-718-878-01	s	WASHER (4), FLAT
16	3-718-879-01	s	RING (A), O
17	3-718-880-01	s	GLASS, FRONT
18	3-718-883-01	s	SCREW, PUSH
19	3-718-884-01	s	RING (B), O
20	3-718-885-01	s	SPACER
21	3-718-887-01	s	HOLDER, MICROPHONE
22	3-718-888-01	s	PACKING
23	7-621-733-08	s	SET-SCT, HEX 2X4 FLAT POINT
24	7-621-771-06	s	SCREW +B 2X5
25	7-621-772-00	s	SCREW +B 2X3
26	7-628-254-00	s	SCREW +PS 2.6X5
27	8-752-606-10	s	IC ICX026BL-A



5-1

5-2

5-2. ELECTRICAL PARTS LIST

BI BOARD

Ref. No. or Q'ty	Part No.	SP	Description
	A-7514-160-A	o	MOUNTED PCB, BI (Not included IC201)
C201	1-135-079-21	s	TANTAL 3.3uF 20% 25V
C202	1-135-079-21	s	TANTAL 3.3uF 20% 25V
C203	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C204	1-135-091-00	s	TANTALUN, CHIP 1uF 10% 16V
C205	1-135-091-00	s	TANTALUN, CHIP 1uF 10% 16V
C206	1-126-397-11	s	ELECT 33uF 20% 25V
C207	1-135-145-11	s	TANTALUM, CHIP 0.47uF 10% 35V
C208	1-126-399-11	s	ELECT 10uF 20% 35V
C209	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C210	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C211	1-126-398-11	s	ELECT, CHIP 4.7uF 20% 35V
C212	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C213	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C214	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C215	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C216	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
D201	8-719-820-05	s	DIODE 1SS181
D202	8-719-820-05	s	DIODE 1SS181
IC201	8-752-606-10	s	IC ICX026BL-A
Q201	8-765-420-02	s	TRANSISTOR 2SK300-3
Q202	8-729-175-72	s	TRANSISTOR 2SC2757-T33
Q203	8-729-100-67	s	TRANSISTOR 2SC1623-L7
Q204	8-729-100-67	s	TRANSISTOR 2SC1623-L7
Q205	8-729-100-67	s	TRANSISTOR 2SC1623-L7
R201	1-216-103-00	s	METAL, CHIP 180K 5% 1/10W
R202	1-216-042-00	s	METAL, CHIP 510 5% 1/10W
R203	1-216-083-00	s	METAL, CHIP 27K 5% 1/10W
R204	1-216-045-00	s	METAL, CHIP 680 5% 1/10W
R205	1-216-081-00	s	METAL, CHIP 22K 5% 1/10W
R206	1-216-025-00	s	METAL, CHIP 100 5% 1/10W
R207	1-216-121-00	s	METAL, CHIP 1M 5% 1/10W
R208	1-216-063-00	s	METAL, CHIP 3.9K 5% 1/10W
R209	1-216-066-00	s	METAL, CHIP 5.1K 5% 1/10W
R210	1-216-001-00	s	METAL, CHIP 10 5% 1/10W
R212	1-216-077-00	s	METAL, CHIP 15K 5% 1/10W
R213	1-216-077-00	s	METAL, CHIP 15K 5% 1/10W
R214	1-216-748-11	s	METAL, CHIP 39K 1% 1/10W
R215	1-216-107-00	s	METAL, CHIP 270K 5% 1/10W
R216	1-216-083-00	s	METAL, CHIP 27K 5% 1/10W
R217	1-216-091-00	s	METAL, CHIP 56K 5% 1/10W
RV201	1-241-145-11	s	RES, ADJ, CERMET 47K

DV BOARD

Ref. No. or Q'ty	Part No.	SP	Description
	A-7514-162-A	o	MOUNTED BOARD, DV
C301	1-126-395-11	s	ELECT 22uF 20% 16V
C302	1-126-399-11	s	ELECT 10uF 20% 35V
C303	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C304	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C305	1-163-099-00	s	CERAMIC, CHIP 18PF 5% 50V
C306	1-163-121-00	s	CERAMIC, CHIP 150PF 5% 50V
C307	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C309	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C310	1-126-398-11	s	ELECT, CHIP 4.7uF 20% 35V
C311	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C312	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C313	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C314	1-163-109-00	s	CERAMIC, CHIP 47PF 5% 50V
C316	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C317	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C318	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C319	1-127-487-00	s	ELECT(SOLID) 4.7uF 20% 10V
C328	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C329	1-135-155-21	s	TANTAL CHIP 4.7uF 10% 16V
C330	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C331	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C332	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C333	1-126-395-11	s	ELECT, CHIP 22uF 20% 16V
C334	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C335	1-163-121-00	s	CERAMIC, CHIP 150PF 5% 50V
C336	1-163-093-00	s	CERAMIC, CHIP 10PF 5% 50V
C337	1-163-121-00	s	CERAMIC, CHIP 150PF 5% 50V
C338	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C339	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C340	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C341	1-163-141-00	s	CERAMIC, CHIP 0.001uF 5% 50V
C343	1-163-105-00	s	CERAMIC, CHIP 33PF 5% 50V
C344	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C345	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C346	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
CN301	1-506-471-11	s	CONNECTOR, 6P, MALE
CN302	1-540-140-11	s	SOCKET, IC
CN303	1-506-477-11	s	CONNECTOR, 12P, MALE
D302	8-719-800-76	s	DIODE 1SS226
IC301	8-752-327-46	s	IC CXD1250M
IC302	8-752-330-26	s	IC CXD1156Q
IC303	8-752-326-08	s	IC CXD1159Q
IC304	8-759-013-02	s	IC CXB0026AM
IC306	8-759-035-93	s	IC SC7S32F
L304	1-410-196-11	s	INDUCTOR CHIP 2.2uH
Q302	8-729-100-67	s	TRANSISTOR 2SC1623-L7
Q304	8-729-100-67	s	TRANSISTOR 2SC1623-L7
R301	1-216-049-00	s	METAL, CHIP 1K 5% 1/10W
R302	1-216-005-00	s	METAL 15 5% 1/10W
R303	1-216-049-00	s	METAL, CHIP 1K 5% 1/10W
R310	1-216-067-00	s	METAL, CHIP 5.6K 5% 1/10W
R312	1-216-097-00	s	METAL, CHIP 100K 5% 1/10W
R313	1-216-081-00	s	METAL, CHIP 22K 5% 1/10W
R314	1-216-005-00	s	METAL 15 5% 1/10W
R315	1-216-115-00	s	METAL, CHIP 560K 5% 1/10W

(DV BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R318	1-216-295-00	s	METAL, CHIP 0-OHM
R319	1-216-295-00	s	METAL, CHIP 0-OHM
R321	1-216-295-00	s	METAL, CHIP 0-OHM
R322	1-216-033-00	s	METAL, CHIP 220 5% 1/10W
X301	1-567-898-11	s	OSCILLATOR, CRYSTAL 28.636363MHz

MC BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	8-814-189-31	s	MICROPHONE, BUILT-IN (C-1007D)
CN5	1-946-031-11	o	HARNESS

PR BOARD

Ref. No. or Q'ty	Part No.	SP	Description
	A-7514-163-A	o	MOUNTED BOARD, PR
C401	1-135-091-00	s	TANTALUN, CHIP 1uF 10% 16V
C402	1-135-091-00	s	TANTALUN, CHIP 1uF 10% 16V
C403	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C404	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C405	1-126-395-11	s	ELECT 22uF 20% 16V
C406	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C407	1-135-155-21	s	TANTAL CHIP 4.7uF 10% 16V
C408	1-135-091-00	s	TANTALUN, CHIP 1uF 10% 16V
C409	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C410	1-126-395-11	s	ELECT, 22uF 20% 16V
C411	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C412	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C413	1-126-395-11	s	ELECT 22uF 20% 16V
C414	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C415	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C416	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C417	1-162-637-11	s	CERAMIC, CHIP 0.47uF 16V
C418	1-126-390-11	s	ELECT, CHIP 22uF 20% 6.3V
C419	1-126-390-11	s	ELECT, CHIP 22uF 20% 6.3V
C420	1-126-398-11	s	ELECT, CHIP 4.7uF 20% 35V
C421	1-163-101-00	s	CERAMIC, CHIP 22PF 5% 50V
C422	1-163-103-00	s	CERAMIC, CHIP 27PF 5% 50V
C423	1-135-155-21	s	TANTAL, CHIP 4.7uF 10% 16V
C424	1-163-081-00	s	CERAMIC, CHIP 0.22uF 25V
C425	1-163-101-00	s	CERAMIC, CHIP 22PF 5% 50V
C426	1-163-241-11	s	CERAMIC, CHIP 39PF 5% 50V
C427	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C433	1-163-109-00	s	CERAMIC, CHIP 47PF 5% 50V
C434	1-135-091-00	s	TANTALUN, CHIP 1uF 10% 16V
C435	1-163-109-00	s	CERAMIC, CHIP 47PF 5% 50V

(PR BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
CN401	1-569-965-11	s	CONNECTOR, BOARD TO BOARD 9P
CN402	1-506-481-11	s	CONNECTOR, 2P, MALE
CN403	1-506-482-11	s	CONNECTOR, 3P, MALE
CN404	1-506-482-11	s	CONNECTOR, 3P, MALE
CN405	1-506-483-21	s	CONNECTOR, 4P, MALE
D401	8-719-800-76	s	DIODE 1SS226
IC401	8-752-051-25	s	IC CXA1310AQ
IC402	8-759-100-94	s	IC UPC358G2
L402	1-410-501-11	s	INDUCTOR 2.2uH
L403	1-410-506-11	s	INDUCTOR 5.6uH
R401	1-216-121-00	s	METAL, CHIP 1M 5% 1/10W
R402	1-216-073-00	s	METAL, CHIP 10K 5% 1/10W
R403	1-216-059-00	s	METAL, CHIP 2.7K 5% 1/10W
R404	1-216-056-00	s	METAL, CHIP 2K 5% 1/10W
R405	1-216-042-00	s	METAL, CHIP 510 5% 1/10W
R406	1-216-049-00	s	METAL, CHIP 1K 5% 1/10W
R407	1-216-073-00	s	METAL, CHIP 10K 5% 1/10W
R408	1-216-097-00	s	METAL, CHIP 100K 5% 1/10W
R409	1-216-022-00	s	METAL, CHIP 75 5% 1/10W
R410	1-216-093-00	s	METAL, CHIP 68K 5% 1/10W
R411	1-216-089-00	s	METAL, CHIP 47K 5% 1/10W
R412	1-216-079-00	s	METAL, CHIP 18K 5% 1/10W
R413	1-216-057-00	s	METAL, CHIP 2.2K 5% 1/10W
R414	1-216-005-00	s	METAL, CHIP 15 5% 1/10W
R415	1-216-059-00	s	METAL, CHIP 2.7K 5% 1/10W
R416	1-216-089-00	s	METAL, CHIP 47K 5% 1/10W
R417	1-216-033-00	s	METAL, CHIP 220 5% 1/10W
R418	1-216-089-00	s	METAL, CHIP 47K 5% 1/10W
R419	1-216-069-00	s	METAL, CHIP 6.8K 5% 1/10W
R420	1-216-049-00	s	METAL, CHIP 1K 5% 1/10W
R433	1-216-295-00	s	METAL, CHIP 0-OHM
R435	1-216-089-00	s	METAL, CHIP 47K 5% 1/10W
R436	1-216-073-00	s	METAL, CHIP 10K 5% 1/10W
R437	1-216-057-00	s	METAL, CHIP 2.2K 5% 1/10W
RV401	1-241-145-11	s	RES, ADJ, CERMET 47K
RV402	1-241-145-11	s	RES, ADJ, CERMET 47K
RV403	1-241-145-11	s	RES, ADJ, CERMET 47K
RV404	1-241-144-11	s	RES, ADJ, CERMET 1K

PW BOARD

Ref. No. or Q'ty	Part No.	SP	Description
	A-7514-161-A	o	MOUNTED BOARD, PW
1pc	1-946-030-11	o	HARNESS
C101	1-126-397-11	s	ELECT 33uF 20% 25V
C102	1-126-394-11	s	ELECT, CHIP 10uF 20% 16V
C103	1-126-395-11	s	ELECT 22uF 20% 16V
C104	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C105	1-126-399-11	s	ELECT 10uF 20% 35V
C106	1-126-399-11	s	ELECT 10uF 20% 35V
C107	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C108	1-126-395-11	s	ELECT 22uF 20% 16V
C109	1-126-397-11	s	ELECT 33uF 20% 25V
C110	1-126-397-11	s	ELECT 33uF 20% 25V
CN101	1-506-467-11	s	CONNECTOR, 2P, MALE
F101	⚠1-532-776-21	s	FUSE, MICRO (SECONDARY) 1.0A 125V
L101	1-408-974-21	s	INDUCTOR 22uH
PU101	1-466-372-11	s	CONVERTER UNIT, DC-DC
Q101	8-729-140-75	s	TRANSISTOR 2SD999-CLCK
Q102	8-729-140-75	s	TRANSISTOR 2SD999-CLCK
R101	1-216-057-00	s	METAL, CHIP 2.2K 5% 1/10W
R102	1-216-072-00	s	METAL, CHIP 9.1K 5% 1/10W
R103	1-216-072-00	s	METAL, CHIP 9.1K 5% 1/10W
R104	1-216-101-00	s	METAL, CHIP 150K 5% 1/10W

FRAME

Ref. No. or Q'ty	Part No.	SP	Description
	1-946-028-11	o	HARNESS (BI-PR)
	1-946-029-12	o	HARNESS (DV-BI)

PACKING MATERIALS & SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP	Description
1pc	3-751-887-21	s	MANUAL, INSTRUCTION
1pc	3-795-581-21	o	SAFEGUARD, IMPORTANT
1pc	3-701-627-00	s	BAG, POLYETHYLENE N-GH
5pcs	3-718-898-01	o	NUT, RUBBER
1pc	3-747-802-01	o	CUSHION (UPPER)
1pc	3-747-803-01	o	CUSHION (LOWER)
1pc	3-748-004-01	o	INDIVIDUAL CARTON